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Questions of the Day and of the Fray

No. I

SUPPLEMENT TO THE MEMOIR ENTITLED:

The Influence of Parental Alcoholism on the Physique and Ability of the Offspring

A REPLY TO THE CAMBRIDGE ECONOMISTS

BY

KARL PEARSON, F.R.S.

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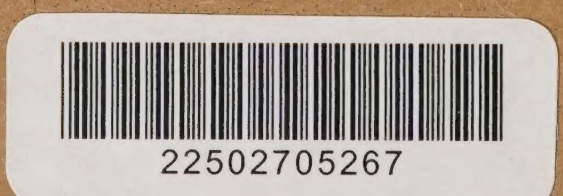
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THE INFLUENCE OF PARENTAL ALCOHOLISM ON THE PHYSIQUE AND ABILITY OF THE OFFSPRING

A REPLY TO THE CAMBRIDGE ECONOMISTS

THE Galton Laboratory memoir, published under the above title, has been subjected to much biased criticism to which it would be pure waste of time and energy to reply. It might be wiser to treat in the same manner the review of the memoir written by Mr. J. M. Keynes in the *Journal of the Royal Statistical Society*[1] had I not before perusing it publicly stated that a reply would be made to it. As it turns out, it is solely an expansion of opinions and views expressed by Professor Alfred Marshall in recent letters to the *Times* newspaper,[2] and which in part have already been answered by me.[3] I shall take this opportunity, then, of generally analysing the reasoning of the Cambridge economists, because the logic of both of them seems equally faulty and their tone equally regrettable.

The aim of the Galton memoir was to take a population under the same environmental conditions, and with no discoverable initial differentiation, and inquire whether the temperate and intemperate sections had children differing widely in physique or mentality. For the purpose of this inquiry the exact nature of the environ-

[1] July, 1910, vol. lxxiii, pp. 769–73.
[2] July 7, August 4, and August 19, 1910.
[3] *Times*, July 12, and August 10, 1910.

mental conditions is *not* essential, the absence of any *markedly* differentiated physical or mental condition in the parents other than the alcoholism is essential. We took two sets of data, the one series from Manchester, the other series from Edinburgh. In the first series one child in each family, whether the parents were temperate or intemperate, was mentally defective. This does *not*, therefore, differentiate the two classes, and it was perfectly reasonable on this basis to inquire whether the alcoholism emphasized the bad health, poor mentality, or other characters of the offspring. Mr. Keynes's statement that the Manchester and Edinburgh data 'relate to two entirely distinct problems' is not correct. They relate to two different sets of material, selected in different manners, but they are applied to precisely the same problem, i.e. to ascertain whether alcoholism or sobriety under a common environment produces marked differences in the physique or mentality of the children.

Mr. Keynes summarily dismisses the Manchester data on the grounds (i) that no details are given of the manner in which the data were collected, and (ii) that the number of cases was somewhat small. As the number of cases is invariably *larger* than that provided by the Edinburgh data, which our critic considers worthy of lengthy discussion, we are thrown back on his first ground for that dismissal. On this point Mr. Keynes could have obtained further information by inquiry. The data were collected by the late Dr. Ashby, a very well-known physician of Manchester, who interviewed the relatives of the children brought for inspection. Dr. Ashby was eminently capable of judgement in these matters, and he was assisted by reports made by the school teachers, the school-attendance officers, and the superintendent of the special schools who

visited the homes. There is little doubt that the investigation in Manchester, and the records provided for us by Miss Mary Dendy, were of precisely the same character and as reliable as the Edinburgh Report, which even Professor Marshall allows to be of ' marvellous excellence '. It is not possible to dismiss the confirmatory evidence of the Manchester material in the light manner adopted by the Cambridge economists.

At this point I may stop to illustrate what I term their faulty logic when they approach a statistical question. Mr. Keynes draws attention to the fact which he says is 'not explicitly stated' in our memoir,[1] that 24% (actually 27 %) of the fathers, and 14 % of the mothers of the feeble-minded were classed as alcoholic. "At Nottingham," he tells us, "where the families of 300 feeble-minded children were investigated, 25 % of these families were found to be alcoholic. But as the proportion of alcoholic families in the population at large cannot be as high as 25 %, the evidence suggests a connexion between feeble-mindedness and alcoholism, rather than the contrary" (p. 770). It is needful here to note the reasoning process! The percentage of alcoholic among the parents of the feeble-minded is stated—no attempt is made to measure the amount of alcoholism in the parents of the non-feeble-minded of the same class, but a vague assertion made that it cannot be as high in the population *at large*! The only way to answer such a question is to actually determine the amount of alcoholism in a sample of the population *similar* to that from which these feeble-minded children were drawn. These children were those of the *working* classes, who alone are sent to the special schools.

[1] The actual numbers, of far more value than percentages, are given on p. 38.

Now the Eugenics Laboratory has recently obtained data bearing on this point from two large Lancashire manufacturing towns in which a house-to-house visitation was made at each birth, and where accordingly a fairly random sample was made of the population of all classes. In this case 16 % were notorious as drinkers, 66 % could be classed as temperate, and 18 % the visitor could only enter under the very doubtful heading of 'said to be abstemious'. In the second town 39 % were described as 'irregular and indifferent in their habits'—a euphemism in the vast majority of cases for drinking.[1] Taking this in relation with the Edinburgh fathers, of whom we found 59 % drank, there is no evidence at all that a percentage of 25 to 30 among the parents of the feeble-minded is beyond that provided by the parents of normal children of the same class. Nor, if it were so, would that be any logical evidence that feeble-mindedness was the result of alcohol. We have quite substantial evidence that feeble-mindedness is an hereditary character ; it is largely interchangeable with general weakness of will. And this weakness which appears in one member as alcolohism can appear in another as mental defect. Mr. Keynes's error is precisely that of the alienists who, finding alcoholism associated with insanity, attribute the latter to the former, whereas it is quite as probable that the general want of mental balance produces the alcoholism. The frequency of collateral alcoholists in stocks where insanity occurs should be sufficient warning that the association of alcoholism and insanity are not necessarily cause and effect. But Mr. Keynes, having prejudged his problem, finds no

[1] It must be remembered that these statistics are for *all* classes of the community, and therefore will certainly give a lower percentage of intemperate than those for the working classes alone.

difficulty in suggesting that the feeble-mindedness in the sober stocks is due to the 'general badness' of the stock, while in the drinking families it is due to the alcohol. The only argument he adduces in favour of this 'general badness' is the greater prevalence of epilepsy and tuberculosis among the sober. The humour of this view lies in the fact that these are the very evils which have been repeatedly asserted to flow to the offspring from the alcoholism of the parents!

But Mr. Keynes sees something, which Professor Marshall has never seemed to realize properly, that to criticize our results it is absolutely necessary to show a real differentiation between the temperate and intemperate sections of the population actually dealt with. Mr. Keynes, I say, recognizes this, but makes no attempt whatever to demonstrate its existence; he merely asserts dogmatically that: "As in the Manchester case, so *on the whole* in the Edinburgh case, the authors are comparing drunken stock with *bad* subnormal stock, and find, naturally enough, that there is not much to choose between them."

Will it be believed that these two distinguished economists make not the slightest endeavour themselves to show from the data that there is any differentiation whatever between the Edinburgh temperate and intemperate sections? All they attempt is to show that *both* sections alike are on a lower plane—than the average working classes of non-manufacturing towns?—no, merely than what *they suppose* the working-class population of such towns to be. It does not seem to me that they realize what this class really is, although a study of Rowntree's *York* and Booth's *London* might have helped them to a juster view. But if we were to admit that the Edinburgh sample

could be described in the language adopted by Professor Marshall and Mr. Keynes, what would follow? Our results would be wholly unaffected *until these economists had demonstrated a differentiation in the two classes of the population dealt with.* If under a given environment drink produces no *marked* effect on the offspring as *children*, there is no reason for supposing that under a different environment also *common* to the two classes it will do so.

The problem, therefore, turns on how far a substantial differentiation can be demonstrated between the temperate and intemperate sections of the populations we have dealt with. In our memoir we distinctly said that this could not be definitely answered until we were able to obtain measurements and observations on the physique and mentality of the parents as well as on those of the children. Failing these, we did what seemed possible; we considered what wages the parents were receiving, and we took a general survey of their occupations, and we found no evidence at all of any class differentiation. The question of wages is not at once answerable in the manner assumed by Professor Marshall, i. e. that the wages of the intemperate were merely nominal wages, and that this section were often out of employment and that their average wage was substantially less than that of the temperate. We should, of course, expect that those who drink heavily, and especially the bout drinkers, would be more often out of employ than the temperate; we should expect on this very account that the families of the intemperate section would be somewhat more frequently in receipt of that charitable relief which is almost indiscriminate in Edinburgh. But in looking through the *Report* itself it is difficult to find any sensible percentage of the fathers out of employment at the time

of the visits.[1] The total reported to have been at some time out of employment, or irregular in employment, is 108, but of these several are entered as 'regular' wage earners in the wage column. Of this total, 19% of drinkers and 14 % of the sober have been recorded as sometime 'out of work'. This is a result quite compatible with the percentages, 56 % and 49 %, we found for the two classes in receipt of some form of charity ; the percentages of the drinkers being in both cases chiefly swelled by the bout drinkers, who from the very nature of the case are likely to be idle and their families seeking relief during their bouts. There is no evidence whatever in these results of the drinkers or the temperate being originally physically or mentally differentiated classes. Yet Mr. Keynes talks as if he had definite knowledge that we were comparing superior stock who had taken to drink with *bad* subnormal sober stock ! Professor Marshall went so far as to suggest that the drunkards would have been receiving 40*s*. a week but for their drinking, and that they were strong men whom a foreman would select for low-grade jobs at the docks. He has since said that this remark had no application to Edinburgh. If it had not, the contents of his first letter to the *Times* had obviously no application either, and could only tend to obscure the question at issue, and so confuse the public mind. As to his suggestion that the drinking section might have been receiving 40*s*. a week but for their drink, the only sort of argument that it is worth while using against that is that the sober might have been receiving 40*s*. a week also if they had drunk no tea ! Neither statement has in itself any scientific value.

[1] 'Father was idle through drink, now working again at a good wage,' the wage being recorded in the wages column is a good illustration of the state of things found at the time of the visits. The wages were in most cases confirmed through the employer.

The true criticism for Professor Marshall, the only line of argument valid for Mr. Keynes, was to analyse carefully themselves the trades followed by the drinking and temperate sections, and show that they supported the view that these sections were mentally or physically differentiated. As they did not attempt to do this, it seemed worth while publishing such an analysis of the trades of the population dealt with. It runs as follows :

Class A.—Papercutters (24*s.* ; S 1, D 1), cabmen (18*s.* 5*d.* ; S 1, D 10), goldbeaters (21*s.* 6*d.* ; S 2, D 1), stablemen (21*s.* 2*d.* ; S 1, D 5), millworkers (19*s.* ; S 2, D 0), porters (20*s.* 6*d.* ; S 9, D 8), warehouse (24*s.* 4*d.* ; S 8, D 2), maltmen (23*s.* ; S 3, D 5), chimney-sweeps (17*s.* 4*d.* ; S 0, D 7), carters (22*s.* 2*d.* ; S 12, D 23), barman (23*s.* 8*d.* ; S 1, D 0), brassfounders (21*s.* 6*d.* ; S 2, D 4), shoemakers (22*s.* 10*d.* ; S 11, D 9), scavengers (22*s.* 10*d.* ; S 2, D 2), stonecutters (23*s.* ; S 1, D 1), cellarmen (24*s.* 2*d.* ; S 1, D 2), frenchpolisher (13*s.* 6*d.* ; S 1, D 0), wagon examiner (20*s.* ; S 1, D 0), surfacemen (18*s.* 6*d.* ; S 4, D 0), gardeners 20*s.* 6*d.* ; S 2, D 0), platelayers (18*s.* ; S 0, D 2), hammermen (20*s.* ; S 2, D 1), factory workers (12*s.* ; S 1, D 3), billposter (18*s.* ; S 1, D 0), hawkers, general labourers, and odd-jobbers (14*s.* to 23*s.* ; S 71, D 85).

Class B.—Sadlers (25*s.* ; S 0, D 3), turnroom (25*s.* ; S 1, D 0), shop hands (25*s.* ; S 4, D 3), typecasters (26*s.* ; S 4, D 5), clerks (27*s.* ; S 2, D 1), ironmoulders (28*s.* 5*d.* ; S 3, D 5), coachbuilders (28*s.* ; S 3, D 1), wellsinker (30*s.* ; S 1, D 0), tailors (27*s.* ; S 4, D 15), coopers (28*s.* 6*d.* ; S 8, D 4), linesmen (26*s.* ; S 0, D 2), timekeeper (30*s.* ; S 1, D 0), jewellers (28*s.* ; S 2, D 0), butchers (30*s.* ; S 2, D 1), painters (25*s.* 6*d.* ; S 14, D 23), pipelayer (27*s.* 8*d.* ; S 0, D 1), sailors (30*s.* ; S 3, D 1), bakers (26*s.* 2*d.* ; S 11, D 10), bottler (27*s.* 3*d.* ; S 1, D 0), railway porters (28*s.* ;

S 7, D 2), gasworkers (27*s.* ; S 5, D 0), tramdriver (27*s.* ; S 0, D 1).

Class C.—Letterpresser (34*s.* ; S 1, D 0), lithographers (36*s.* 6*d.* ; S 2, D 2), bookbinders (30*s.* 3*d.* ; S 3, D 6), upholsterers (36*s.* ; S 1, D 2), ironfounders (32*s.* 7*d.* ; S 5, D 4), wireworker (32*s.* 6*d.* ; S 0, D 1), plasterer (37*s.* ; S 1, D 0), cabinetmakers (33*s.* 6*d.* ; S 2, D 1), joiners (30*s.* 10*d.* ; S 3, D 9), steam crane (30*s.* 10*d.* ; S 1, D 1), masons (34*s.* 1*d.* ; S 5, D 17), blacksmiths (38*s.* 10*d.* ; S 1, D 5), engineers (30*s.* 2*d.* ; S 6, D 2), printers (31*s.* 1*d.* ; S 13, D 16), stokers (31*s.* 7*d.* ; S 2, D 1), plumbers (34*s.* 6*d.* ; S 3, D 5), rivetter (40*s.* ; S 1, D 0), tinsmiths (31*s.* 7*d.* ; S 2, D 4), slaters (36*s.* 1*d.* ; S 3, D 2), chemist (36*s.* 6*d.* ; S 1, D 0), picture framers (31*s.* 4*d.* ; S 0, D 2), postmen (32*s.* ; S 0, D 2), glassmaker (40*s.* ; S 1, D 0).

The trades are divided into three classes—A, those with wages under 25*s.* ; B, those with wages 25*s.* to 30*s.* ; C, those with wages over 30*s.* In each case the average of the recorded wages of the individuals following that trade is given. S = sober, D = drinks, and the numbers following these letters give the number of each type. To understand this classification we may remind the reader that after allowing for all those cases in which the authors of the *Report* state 'average' wages of the individual, the average wage of a drinker is 25*s.* 6*d.*, and of the temperate 25*s.* 5*d.*[1]

Those who will carefully examine this table will see that there is no marked differentiation in the callings of the two sections. Of the whole series here tabled 55 % drink. Of the low wages, Class A, as a whole 54 % drink ;

[1] Wage when one parent (generally father) drinks, 25*s.* 6*d.* ; wage when both drink, 24*s.* 8*d.* ; wage when neither drink, 25*s.* 5*d.* Wage when either or both drink, 25*s.*

among the lowest types of labour, hawkers, general labourers, odd jobbers, 54 % also drink. Of the high wages, Class C, which contains not only the trades of intelligence, lithographers, printers, cabinetmakers, &c., but those of strength, blacksmiths, masons, &c., 59 % drink. Of the medium wages, Class B, 51 % drink. Now Professor Marshall tells us that "the strong drunkard probably came down to that low grade of work merely because he was a drunkard, while the sober man probably came there because he had not sufficient character and physique to earn a comfortable living anywhere". In the above table there is nothing of this kind visible, the temperate and the intemperate appear in all trades from the highest to the lowest. In the better trades we find the drinkers slightly in a majority; there is no evidence whatever of the drunkard being in low trades highly paid on account of his physique; nor is there any evidence at all of the population we are dealing with following low grades of work. It has every appearance of an average working-class population in a non-manufacturing town. Professor Marshall tells us that we have accepted with complacency the praise bestowed upon us for having "shown that parental intemperance has no causal relation to filial degeneration".[1] He admits that this is the problem we are discussing, and yet when the above tables, the facts of which he himself should have considered before making suggestions as to the constitution of the Edinburgh population, are placed before him, he can only remark: 'Those tables have no bearing on any question in which I am interested.' If he is not interested in those

[1] It is desirable to state that this wording is not ours and does not represent any conclusion reached by us. We drew from our data the result that parental alcoholism does not *markedly* affect the physique or mentality of the offspring as *children*.

tables, why has he made random suggestions as to the nature of the occupations of the Edinburgh population? Why, indeed, has he touched at all on the influence of parental alcoholism on the physique and mentality of the children? Both Professor Marshall and Mr. Keynes have hinted—they have made no attempt to demonstrate—that the alcoholic are fallen better stock and the sober subnormal bad stock. Yet Professor Marshall tells us that these tables have no bearing on the problem he professes to discuss! Both seem to think that general statements as to the degeneracy of the whole population are logical arguments as to its internal differentiation. The slight differences we have found in wages, want of employment, and charitable relief are, we contend, consistent, and just what would be anticipated, from a knowledge of what results in extreme cases of alcoholism; they are not indicative of any original mental, physical, or class distinction between the temperate and the intemperate parents.

But is the view taken by Professor Marshall and Mr. Keynes about the nature of the Edinburgh population, even if it has no bearing on our results, a sound one? They tell us that we have not taken a 'random sample of the population'. Such a term we, of course, use in a technical sense—namely, a population in which there has been no *differential* selection of the two sections bearing the character which we are discussing, i. e. the use of alcohol. They lived in the same neighbourhood, followed the same trades, and such differences as we have been able to detect were secondary to the use of alcohol, and not primary characteristics. But do the distinctions between the Edinburgh population and those of other districts on which Professor Marshall and Mr. Keynes

insist actually exist? Is not Professor Marshall exaggerating the state of affairs because his opinion with regard to alcohol, unlike ours, is already formed? He makes—as does Mr. Keynes—much of the fact that 53% of those families with which we have dealt are in receipt of some form of charity. One of the main conclusions of the Edinburgh Report was the emphasis laid on the indiscriminate nature of charity in Edinburgh. I doubt whether it is more so there than elsewhere, but it is absolutely necessary to draw attention to the fact that families whose total receipts amount to 46*s.* or 58*s.* receive charitable aid, so easy is it to obtain such help! There is also another side to this question. Professor Marshall, citing Mr. Booth, tells us that a regular weekly 21*s.* is the *upper* limit of the poorest million of the population of London. Probably *every one* of that million who is the father of a family with four or five children—as the Edinburgh father—is in receipt of charitable relief of the character noted in Edinburgh i. e. school dinners, medical charities, cheap coal and meal societies, 'visits' from churches, &c. That 53% of a population, whose average wages we make to be 24*s.* to 25*s.*, and Professor Marshall asserts to be lower, are in receipt of some form of charitable relief in a town of indiscriminate charity is only to be expected. Nor can men with four or five persons dependent on them and wages of the above magnitude be described in the language of Professor Marshall as "devoid of self-respect" or "congregating in an atmosphere that is foul physically and morally", because they accept meals for their children or cheap coals when they come in their way. Mr. Keynes lays stress[1] on (i) the number of drinkers in the population

[1] The only other point of criticism, beyond those tabled below, that

dealt with. I have already referred to this point, and any one at all familiar with the Scottish conditions would anticipate a far larger number of drinkers than occur in English towns. Statistics in the Laboratory appear to indicate that at least somewhere from 25% to 40% would be classed in the English manufacturing districts under the same grades of 'drinking' as we have used for the Edinburgh data; probably the upper limit would be reached in a town like York with a population more akin to Edinburgh; (ii) the number in receipt of charitable relief; this amounts to 53% in the cases as tabled by us. I should be surprised to find it sensibly less—with the same wide definition of 'charity'—in the same general working-class population of a non-manufacturing English town; and for the same reason, that the average wages of a large section are not adequate for the maintenance of a wife and family, (iii) 74% of the families being in one- or two-roomed tenements. Now the tenement system is largely peculiar to Edinburgh, and the only comparison possible in such a case is with the population of a city which is also largely tenemental. It is perfectly true that in the English manufacturing districts only about 25% of the families are said to be in tenements of two or less rooms. The general arrangement is a small

I have been able to discover in Mr. Keynes's paper, is that we have given "in general no evidence as to the habits of the parents at the time of the birth of the children, many of them 11 or 12 years of age—a point of some importance". The reply to this is that there are as many children of 5 and 6 as of 11 and 12, and if some children were born before parental alcoholism had started, some were certainly born after, and therefore this mixed category should be worse than the category containing children whose parents have not been alcoholic at all. Further, a pretty wide experience of the relative healthiness of children, earlier and later born, has shown us that the preponderance of criminality, idiocy, phthisis, and other signs of degeneracy usually attributed to parental alcoholism occurs among the *elder* born.

house of three to four rooms. Thus in one Lancashire town out of 2000 random families of *all* classes 22% had two or less roomed tenements ; 17 % three-roomed houses ; 44 % four-roomed houses ; 17 % five and more roomed houses. But this only shows that the custom is to build four-roomed houses, it does not indicate how many lodgers, or other families even, were crammed into these four-roomed houses. What we do know is that in a separate house town 32% of the operatives and labourers lived in one and two-roomed tenements, 25% in three-roomed tenements and 43% in four or more roomed tenements, but the actual number of rooms used by the family in the latter cases is not known. I cite this result to show that while the Edinburgh sample appears at first sight worse than this English case, the English case wants far more investigation before it can be said to be better than the Scotch with a different system of housing. In none of the three matters on which stress is laid does Mr. Keynes provide *any* comparative data, the sole means by which he could have substantiated his assertion that this was a peculiarly differentiated population.

Now from Glasgow we have details of nearly 73,000 children. The schools examined are grouped into four classes. Groups A and B are schools of the poor and poorest districts ; these embrace 50,000 children ; Groups C and D belong to the districts of the better social classes, Group D including four out of the five Higher Grade Schools in the City ; these embrace 23,000 children. Of those 50,000 children no one can say that they represent an exceptionally 'low grade' population, they are the great bulk of the children of the Glasgow working-class population. And yet 79 % of them come from one- and two-roomed tenements. In fact, of the whole child

population of Glasgow, *including the districts of better social class*, 66 % come from one- and two-roomed tenements. In the poorest districts, Group A, 87·5 % of children come from such tenements, that is to say, more than one-third of all the children examined in Glasgow have from this standpoint much worse home conditions than the Edinburgh children; two-thirds have worse conditions, i.e. 79 %; and 84 % of the entire child population of Glasgow (Groups A, B and C) have precisely equal conditions, i.e. 74 % of them come from one- and two-roomed tenements. If a state of affairs which corresponds to that of 84 % of the Glasgow children is cited by Mr. Keynes as evidence of the exceptionally low-grade character of the Edinburgh families dealt with, are we not justified in suggesting that the Cambridge economists are merely firing in the air, and that they have no adequate knowledge of the social condition of the large towns of Scotland? It is obvious that if a random sample were taken of the *working-class* population of Glasgow, more than 74 % of the children would be found to come from one- and two-roomed homes—a mark, according to Mr. Keynes, of a population "living under the worst slum conditions", and not consonant with a "widely representative character". I fear that our Cambridge economists live in a world of their own, quite out of touch with the true social conditions of large sections of the British population. The conditions depicted may be deplorable, we were not discussing that subject, but the ignorance of their representative character would, we should imagine, even hamper the usefulness of an English economist.[1]

[1] That they should be used as an argument in a journal which claims to represent British statistical knowledge makes me gravely doubt

It is a noteworthy fact that Mr. Keynes quotes Edinburgh and Aberdeen comparative statistics as to weight and height of children as against those of the selected Edinburgh school, but that he *omits* to refer to the Glasgow data which show that in the vital matter of weight the Edinburgh boys compared favourably with the Glasgow boys. But all such comparison is practically idle, as any one with anthropometric experience knows. Every different social class, every different locality, has its own height and weight standard, and the so-called Anthropometrical Committee's standard has no comparative value at all. If Mr. Keynes had taken the trouble to compare the two schools described in the report as (i) Country School (Poor district) and (ii) Country School (Prosperous district) he would have seen how little stress can be laid on either prosperity or poverty as producing difference of measurement of this kind when we pass from one class to a second, or one locality to a second.[1] They are in the first place a matter of local race and of the selection (combined with heredity) which differentiates social classes. The schools he selects for comparison contain children of different social classes from the 'selected school', and their superiority in weight and stature no more marks the excessive degeneracy of the parents of the 'selected school' children than the difference between the Edinburgh and Aberdeen data, for an examination of the Aberdeen schedules at present in this Laboratory shows that they included a school attended by many boys of the professional classes. Mr. Keynes's ideas of statistical treatment are well illustrated by his comparison of the boys of the

the adequacy of its editorial management. This view is confirmed by Mr. Keynes's treatment of anthropometric data.

[1] The weights and heights of the boys in (ii) are on the whole less than those in (i)!

'selected' Edinburgh school with those of the 'Edinburgh Public School' and the 'Higher Grade School'. It is not only that the former represents totally different social classes from the latter, but that the children of 14 in the 'selected' school are represented by 5 boys and 2 girls! Mr. Keynes has taken the averages on 2 to 5 children as comparable with those on children who are said to stay to school until 18 years. In other words, since the categories of children aged 13 and 14 in a public elementary school are depleted of their oldest, physically and mentally fittest, who go out into life, or get scholarships to secondary schools; those left are almost invariably the youngest and feeblest. It is 7 of these which he has compared against the full categories of children of 14 in secondary schools! The drop from 61 boys of 13 to 5 of 14, and 53 girls of 13 to 2 of 14 does not seem to have struck Mr. Keynes, and he handles his averages based on 5 boys and 2 girls as follows:

> The average weight of the children is below the normal to a similar extent [What is the normal? Nobody knows it, and the Edinburgh values are greater than those of many Glasgow and London schools], and the deficiency becomes more marked as the children grow older. Boys of 14 weighed on the average 21 lb. less than in the Edinburgh Public School, 18 lb. less than in the Higher Grade School; girls of 14 weigh 23 lb. less than in the Public School, 25 lb. less than in the Higher Grade School. These figures also the memoir omits and ignores.

The memoir naturally omits them because they have no bearing whatever on the point under discussion, namely, the differential effect of parental alcoholism on children of the same class and environment. Trained anthropometrical statisticians would, however, under any circumstances ignore results based on averages (!) of

5 boys and 2 girls who were left in a public elementary school at the age of 14. Comparing, however, the Edinburgh Public School with the 'selected' school between the ages of 5 and 12, where comparison is possible the difference amounts to about 2 inches in stature and 4–5 lb. in weight—precisely the class differences we are accustomed to between public primary and secondary higher grade schools in London, and not marking off the Edinburgh data as characteristic of a population congregating in "an atmosphere that is foul physically and morally"! or in any other way as differing from the bulk of the like population in non-manufacturing towns. It appears to me that the Cambridge economists cannot have dealt with large numbers of school observations nor can they be in the habit of handling statistics, or they would never especially extract and quote any result based on an average of 2!

But there is a more serious charge than the above to be made concerning the manner in which the Edinburgh *Report* is handled, in this case, by Professor Marshall. He condemns the inhabitants of the district dealt with in the following sentences:

> As it is they congregate in an atmosphere that is foul physically and morally, where even the sober residents are as a rule weakly in body and devoid of self-respect.

And again:

> We may *assume* that with *few* exceptions they are of a low grade, for stress is laid on the fact that these parts contain *some* 'old families' belonging to the 'substantially comfortable and thoroughly respectable working class' who continue to live there 'despite the degeneration of the immediate neighbourhood'. *Possibly* some of these old families stayed on partly because, though reputable, they are somewhat lacking in vitality.

Now compare this with the exact words of the *Report* concerning the school whose children were investigated :

> It has upon its rolls children from the poorest parts of the city, and yet it has also an admixture of the substantially comfortable and thoroughly respectable working class. . . .
>
> In the poorest part of a city of many centuries' growth there are also *many* ' old families ' who continue to reside in the houses their fathers and grandfathers lived in for old times' sake, despite of the degeneration of the immediate neighbourhood. *This gives the school a widely representative character which especially commended itself to the Committee in making its selection.*

The italics in both the extracts from Professor Marshall's letters and the *Report* are mine, and I would ask the reader to fix his attention upon them. The Committee chose the school because it was of a ' widely representative character '. And why was it widely representative ? Assuredly because it embraced an " admixture of the substantially comfortable and thoroughly respectable working classes ". Why does Professor Marshall change *many* into *few* and again into *some* ? Why, when the *Report* only tells us that ' old families ' live on in their ancestral houses for ' old times' sake ', a reason of sentiment, does he suggest that they stayed there because they were lacking in vitality ? It is clear that Professor Marshall's preconceived views are such, that he cannot quote accurately the language of the *Report*. No one can suppose that he misquoted it consciously. Yet that he has misquoted it verbally and in spirit is obvious. How can a population which the Committee selected as of a ' widely representative character ' be ' with few exceptions of a low grade character ' ? We took it, and I still take it, with Rowntree's *York* and Booth's *London* in mind, with data as to tens of thousands of children before us in the Laboratory,

and much information as to their parents, as 'widely representative' of, not the specially selected skilled artizan class, but of the general working population of a big non-manufacturing town. Such population samples, although neither creditable to our race nor to our civilization, are in fact widely representative. And it is not the members of the Eugenics Laboratory, but the Cambridge economists in their cloistered studies, who exhibit ignorance, when they try to demonstrate that the Edinburgh sample belongs to an exceptionally 'low grade' population in which 'physical and moral squalor are rampant'.

I have discussed the nature of the Edinburgh sample at length, not because it is of importance for our investigation, whether it be or be not a sample of the general working-class population, but because it illustrates the temperament with which our critics approach their problem. They tell us that our labour is wasted because our material is exceptional; but they make no attempt to show any differentiation in the two sections of the population we are dealing with. They content themselves with asserting that the population is a 'low grade' one, which has no logical bearing on the problem in hand. And even this is a mere assertion, for they bring no data to show what a Glasgow or a Liverpool, a York or a London school of like character in a working-class neighbourhood would show as to parentage and as to offspring. All they can achieve is to quote the percentages of drinkers, of charity-receivers, and of two-roomed tenements in the *Report*, and assert that these numbers are markedly different from what they are elsewhere; but what they may be in other parts of Edinburgh, in Glasgow, in other tenement cities, or allowing for difference of race and environment in York or London, they neither state nor

apparently know. This is not science, it is the plausible verbalism which renders so much of economics barren.

Mr. Keynes scolds Miss Elderton for spending her time in reducing other persons' data instead of improving the 'original material'. I do not know whether he has ever organized the survey of a thousand homes, and knows the years of work and labour it involves, especially when it has to be done by aid of volunteer workers, and no special funds directed to this end. In the Galton Eugenics Laboratory we do know something of the difficulties involved. We value equally the social inquirers who join us, and whose duties lie in collecting material, and the trained statisticians whose duties lie in the reduction of data. We are not likely, however, to put one to the task for which the other has been trained, nor suppose that a few weeks' computation can be profitably exchanged for the like time spent in collecting original material. Nor, again, are we in the least likely to give up modern methods of statistics because a critic, who, as far as I am aware, has given no public illustration of his power of handling them, tells us that they are unnecessary and labour wasted. We believe that the attempt to show in a definite quantitative manner the extent of association between all forms of environment and character can never be wasted labour, and the partial correlation coefficients which exhibit the relation between drink in the parent and character in the child for constant age of child cannot be replaced by mere tables or diagrams unless the numbers be ten times as large as those generally available. Not even a Cambridge economist could *safely* read out of the mere tables the result conveyed by Miss Elderton on p. 7, that, having regard to the probable error of the results, and allowing for the age of the child, there was a very

slight but sensible influence of alcoholism of the mother on the height and weight of the daughter, and a still less influence on the son,while there was practically no influence of the alcoholism of the father on the children of either sex. We are not likely to give up modern methods of statistics because Mr. Keynes assumes that *we* must find them laborious, or holds that they are unnecessary. We have heard that story before from biologists, from anthropologists and from medical statisticians. But we know that it is precisely by those methods that light has been thrown into many dark places, where, in the manner suggested by Mr. Keynes, all sorts of opinions had been asserted as deducible from mere inspection of the figures. Yet nowadays these modern methods have been established in anthropology, they have contributed valuable results to biology, they are creeping even into the reports of medical officers of health and of education committees; nay, thanks to the Americans, we know that they can be of the utmost service to economics. Some day Cambridge may awake to the fact that a school of modern statistics may help to raise to a still higher level its biology, its anthropology, its medicine, and even its economics.

I will go further and, using Professor Marshall's phrase, say that it is very healthy for the Cambridge economists if occasionally a 'mathematical outsider'—please note the hierarch in the use of this phrase—does 'upbraid'[1] them with propounding plausibilities before they have even examined the material on which the investigation they set out to criticize has been based. Is it not a very serious state of affairs that an investigation which Professor Marshall

[1] The reader of Professor Marshall's letters and Mr. Keynes's criticism would certainly anticipate that I and not they had opened the controversy and accused them of 'wasting labour','culling facts in a hurry', and of generally foolish and ignorant conduct!

now describes as of 'marvellous excellence', and "approaching more nearly than anything else I know in any language, covering so large an area in so few words, to the ideal which Le Play set up for social investigations", should have to wait to be introduced to his notice by the studies made on it by 'mathematical outsiders', who acclaimed it within a year of its publication as one of the most valuable social researches of the day? We might almost have anticipated that it would be the economists, and not the mathematicians, who would have hastened to extract social nuggets from such a mine!

Nay, with the utmost respect and a deep sense of obligation and affection for my *Alma Mater*, may I not venture to carry my 'upbraiding' a little further and assert that it is a trifle absurd if the Cambridge economist can term the classification of trades of the temperate and intemperate, on which the whole argument turns, a subject which has 'no bearing on any question in which I am interested'? Had the Cambridge economists devoted the last fifteen years to the development of an adequate theory of statistics, and the last ten largely to its application to the study of man in his social relations, they would probably have less hostility and use slightly more restrained language when they find 'mathematical outsiders' venturing to attack problems for the solution of which those economists have neither themselves provided adequate data nor devised instruments by which they might handle effectively the material collected by others.

The members of the Galton Laboratory have far too much work in hand to seek controversy; they have disregarded the large amount of heedless criticism which their memoir on alcoholism has produced. But some reply to critics of distinction must occasionally be made, because

the world is apt to take their opinions as authoritative, rather than weigh their actual arguments or test how far they have produced counter-evidence or exhibited real knowledge of the subject under discussion. At any rate, this supplement to our memoir may place on permanent record our very strong conviction that the critics have not only failed to shake our position, but even to assault it in the only logical manner possible, that is by the production of evidence that the temperate and intemperate of both our Manchester and Edinburgh samples belonged originally to essentially differentiated social groups.

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